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ULCERATIVE ENDOCARDITIS:

EMBOLISM OF THE ARTERIES OF THE LEFT LEG.

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THE patient was an unmarried lady thirty-two years of age. She was always well till March, 1863, when she had an attack of acute rheumatism, beginning in the ankles, but soon involving the heart, as was shown by palpitation and pain in the cardiac region. There was so much dyspnœa that she was not allowed to walk up-stairs for four months, and the cardiac symptoms were more or less marked for two years. There was also some cough at the time. In January, 1869, she had another attack, not so severe as the first, and there were occasional pains in the chest and shoulders afterwards, particularly if she took cold. Though the dyspnœa did not increase unless she had rheumatism, it was noticeable, particularly on exertion. There was never any œdema. With the exception of the above symptoms, and pain in various parts of the body from time to time, she had no serious illness until the attack which caused her death. She was, however, subject to sick-headaches, in which there was unilateral pain and dimness of vision, the attacks lasting sometimes several days.

In November, 1873, while traveling in the cars, she was alarmed by increased pulsation of the heart, and a sensation as if it were higher up than usual. The pulse was 76, and somewhat full. The pulsation of the heart was felt perhaps a little farther to the left than usual, and was strong. There was a well-marked souffle at and near the apex, heard just before the shock of the first sound. There was nothing, however, which required more than a single visit, and she continued as well as usual, with occasional slight ailments.

During the year preceding the final attack the appetite, though not great, was sufficient, and she sometimes complained of feeling weak, but there were causes for depression of spirits, and she took a very active part in many good works.

On March 24, 1877, she reported that on the night of the 22d she began to feel pain in the head and left side of the chest, in the thighs,

and calves of the legs. The cheeks were red, and there was heat in the top of the head. The appetite had failed, and there was dryness of the mouth, but no thirst. Pulse 76 to 80. On examination of the heart the souffle previously described was still heard. Salicylic acid was ordered in doses of ten grains once in two hours. This caused tinnitus very quickly, and was diminished sufficiently to give relief from this symptom, and in a few days was replaced by quinine. Though the pulse rose to 96 and 100, and the appetite continued deficient, the pain diminished, and on the 27th there was none except in the head. She was now able to sit up, but continued quite feeble, and complained much of headache and of pain in the ankles during the months of April and May. Still she gained enough to drive out, but always complained of great weakness, which was but little influenced by gentian, nux vomica, iron, and a sufficient amount of nourishing food. Occasional visits only were made, as the principal complaint was of weakness.

Early in May she began to notice slight chills or rigors. These were at first mentioned incidentally as scarcely worthy of notice, but as they became more marked and were accompanied by increased debility and depression of spirits, close inquiries were made. It was then ascertained that they showed a tendency to appear at about nine o'clock in the morning, and that she had had fever in Rome many years before. The possible influence of some malarial poison being borne in mind, twelve grains of quinine were given six hours before the usual time for the appearance of the paroxysm. The result was very encouraging, as the rigor did not return. She continued to take two grains of quinine every three hours, and steadily improved until May 20th, when she looked and felt better than for some time. But at three A. M. on the morning of the 21st there was a rigor, and this was repeated at three P. M., preceded by flushing of the face. The pulse rose to 108 in the morning and 120 in the evening, when the temperature was 104.5°. Still she made but little complaint, except of weakness. Until this time she had sat up the greater part of the day, but was now advised to remain in bed, which she was ready to do. For several days there was no rigor, but as there was a suspicious chilly feeling at nine A. M. on the 23d, twelve grains of quinine were given at three on the following morning, but at noon she had a severe rigor, followed by heat. This recurred at four P. M. on the 25th, but is not again mentioned in the notes until the 29th. During this time the pulse was usually 108 in the morning and 120 in the evening. The temperature varied from 101° to 103°, and on the day of the last rigor rose to 104° in the morning and 104⅘° in the evening. For a number of days she was troubled with diplopia when looking at things in a certain direction. This she had observed before while taking quinine. There was occasionally a little wandering of the mind when she was only partially roused, but

never any real hallucination. The respiration was quite rapid, being 56 at noon of the 26th. A slight hacking had been noticed for some time, and a full inspiration always excited cough. Repeated examinations of the chest, however, failed to show any pulmonary trouble. The tongue was covered with a white coat. The appetite was moderate, but sufficient milk and oatmeal were taken to secure proper nourishment. The bowels, though at times sluggish, were generally moved without the use of medicine. The urine was examined a number of times. On May 27th the specific gravity was 1017, and there was some albumen, but no casts were found. The nights were often restless, so that bromide of potassium, aconite, and hyoscyamus were used from time to time. She complained of nothing but general weakness and stiffness of the knees. On the night of the 23d there was pain in the left iliac region, which was not mentioned again. On May 25th she was seen in consultation by Dr. Morrill Wyman, who was unable to assign any local cause for the rigors. On May 28th and 29th she was reported as feeling and looking better and brighter than for a long time. The pulse fell to 112, the temperature to 100⅗°.

At half past one P. M. on May 29th, after a chill, she suddenly complained that the left leg felt "as heavy as lead, cold, and queer," and the limb gradually became numb from the foot up to the groin. When seen, at half past three o'clock, the leg was colder to the hand than the other, the change of temperature having been noticed by the sister immediately after the symptoms showed themselves. Sensation to touch, heat, cold, or pinching was lost. No pulsation was felt in the arteries of the leg, but an examination could not be made above the popliteal region.

Until the rigors were reported there was nothing in the history of the case to excite any particular fear of serious disease. Depression of spirits and excessive devotion to charitable work had caused, as was supposed, such deterioration of health as to explain sufficiently the slow convalescence. The symptoms were only those of a slight rheumatic affection and debility. When the rigors became decided, other disease of a more serious character was feared, but the effect of the quinine was so satisfactory as to encourage the hope that they had a malarial origin. When, however, they returned and were repeated twice on the same day, when the pulse and temperature rose and continued high, fears were expressed of the presence of some serious internal disease, — either inflammation, embolism, or both. A grave suspicion of something of the kind was alone warranted, as repeated questioning and careful examination failed to show any local cause. But the nature of the disease was made clear by the sudden coldness, numbness, loss of sensation, and absence of pulsation in the left foot and leg. Ulcerative endocarditis, with embolism, was at once diagnosticated, and the family were informed of the

very dangerous and probably fatal character of the disease. On the morning following these symptoms she looked brighter than for some time. Pulse 108 in the morning, 100 in the evening. The temperature fell from 103° the previous evening to 100° in the morning and 99° in the evening. She complained only of a dull, constant pain in the left leg, and there was marked tenderness in that groin. No arterial pulsation was felt below the saphenous opening. To the hand the left leg felt cool just below the knee, and a little farther down was quite cold. The surface thermometer applied to the side of the calf showed little if any difference in the actual temperature, but on the following day the rapidity with which it was affected was very much greater in the healthy than in the diseased limb. Irregular dark-red or purplish spots were seen upon the foot, while the skin of the remaining portion, as well as that of most of the leg, had a dusky look. From this time until June 13th, when she died, with the exception of some temporary improvement in the color at times, marked changes for the worse took place in the affected limb. On the 3d the skin of the sole and heel was quite dark, while the color of the rest of the foot was better, but there was no improvement in the temperature. On the 5th an irregular line of demarkation began to show itself, extending downwards and outwards below the anterior tuberosity of the tibia. Below this the leg was dusky, and cold to the hand. On the 7th the ends of the toes felt hard and dry, and the discoloration of the rest of the leg was more marked. On the 9th the toes had evidently shriveled, and the skin of the heel had become dry and hard. By the 11th the line of demarkation had become very obvious and quite vascular, while the limb below was of a dark, dull purple color. Dr. Wyman, who saw the patient in my absence on the 8th, noticed that the pulsation had ceased on the upper part of the femoral artery, and it did not return. The heart was examined repeatedly, but, with the exception of a strong pulsation and some roughness with the first sound near the apex, nothing unusual was noticed ; the souffle even, which had been so distinct before the last attack, had disappeared. The respiration was always rapid, generally about 48, until towards the close, when it rose to 66. An examination of the abdomen on the 5th showed that the spleen was apparently enlarged, but the liver was not above the full normal size. The mind was sufficiently clear much of the time, though there was some wandering occasionally, which increased towards the end. The prostration was marked. There was great restlessness, partly owing to pain or discomfort in the affected limb. Liquid nourishment in the form of milk and gruel was given regularly and frequently, and was borne well. The bowels generally acted sufficiently without artificial aid. The temperature, which has already been reported as falling at the time of the obstruction of the arteries, rose but little for several days. It was gen-

erally 100° in the morning, but did not rise above 102.5° in the evening, and was only once reported as high as that. On the 5th of June, however, it rose to 103° in the evening, continued to rise with some fluctuations, and on the 11th was 104° in the morning and 106° in the evening. The pulse continued 120, and rose with the temperature. On the 6th it was 136 in the evening; on the 9th, 148 and difficult to count; on the 12th, 160. Death took place on the 13th.

As it was evident that nothing could be done to remove the condition upon which all the symptoms depended, the treatment was confined to giving relief. Bromide of potassium, chloral, and liquid Dover's powder were mainly relied upon.

An autopsy was made twenty-six hours after death, but out of deference to the wishes of the family was carried no farther than was necessary to ascertain the true character of the disease.

There were some old pleural adhesions, but the lungs were normal. Pericardial surfaces everywhere united by old, firm false membranes. Heart considerably enlarged. Aortal valves thickened and somewhat corrugated. Mitral valve thickened and whiter than usual, but the orifice sufficiently free. On its right or anterior segment was a soft, reddish mass, looking like coagulated and partially decolorized blood, fissured and friable. This was perhaps two thirds of an inch in diameter and a quarter of an inch in thickness. It occupied a shallow depression caused by the destruction of the surface of the valve, and was surrounded and limited by the ragged edge of the healthy lining membrane. Liver considerably enlarged, so that it extended into the left hypochondrium. Spleen increased in size. Imbedded in its substance were irregular masses of a dull, tawny brown color, quite soft, and of various sizes, the largest perhaps an inch and a half through. These resembled partially decomposed fibrinous coagula, and were evidently the result of embolism. Kidneys soft and pale, but not otherwise remarkable. The arteries were examined as far as the common iliac and found pervious.

In volume vi. of Ziemssen's *Handbuch der speciellen Pathologie und Therapie*, page 60, may be found an excellent article upon the subject of "*diphtheritische* or *ulceröse endocarditis.*" Though we are there informed that hardly two cases are known which resemble each other completely, our case illustrates so many points mentioned in the general history of the disease as to make it profitable to call attention to them, particularly as the affection is quite rare. The two forms described, the typhoid and the pyæmic, are both represented. The pain and prostration were followed by rigors, and these by the clear indications of local embolism. We had — at first integrity of mind ending at last in delirium and coma — marked prostration — rapidity of respiration, contrasting strongly with the absence of all appreciable lesion of the

lungs — a high pulse and temperature — rigors repeated frequently, regularly and irregularly — a cessation of the same towards the close — albuminuria, which we are told hardly ever fails — an enlarged spleen — the absence of any complaint of subjective cardiac symptoms, and of physical signs, which has been noticed even when ulceration has occurred, though physical signs are generally found. Vomiting and diarrhœa, which are common, were wanting in our case.

In regard to diagnosis, it is stated that ulcerative endocarditis can be rarely recognized with certainty. It is either entirely overlooked or only suspected. In our case an accurate diagnosis was impossible until the obstruction of the circulation occurred. There may be local cardiac signs which render the diagnosis very probable, but where these fail the disease is liable to be confounded with typhoid and intermittent fever, or other conditions. Though the rigors often recur irregularly, perhaps several times a day, they may be so regular as to simulate those of intermittent fever, while the enlargement of the spleen may also suggest typhoid. If, however, we bear in mind the apyrexia of intermittent fever and the regular course of the temperature in typhoid, we shall be much aided in diagnosis. But the most important point is the previous history of the case. Though recovery is not impossible on theoretical grounds, no case of the kind is known.